

1655279-1.1 Page 1 (10)	<b>Symbols for piping</b>	<b>I 00 25 0</b>
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**L28/32DF, L27/38, V28/32S, V28/32H, L28/32S, L28/32H, L23/30DF, L23/30S,  
L23/30H, L21/31S, L21/31, L16/24S, L16/24, L27/38S**











































**General**

No	Symbol	Symbol designation	No	Symbol	Symbol designation
1. GENERAL CONVENTIONAL SYMBOLS			2.13		Blank flange
1.1		Pipe	2.14		Spectacle flange
1.2		Pipe with indication of direction flow	2.15		Orifice
1.3		Valves, gate valves, cocks and flaps	2.16		Orifice
1.4		Appliances	2.17		Loop expansion joint
1.5		Indicating and measuring instruments	2.18		Snap coupling
1.6		High-pressure pipe	2.19		Pneumatic flow or exhaust to atmosphere
1.7		Tracing	3. VALVES, GATE VALVES, COCKS AND FLAPS		
1.8		Enclosure for several components as-sembled in one unit	3.1		Valve, straight through
2. PIPES AND PIPE JOINTS			3.2		Valve, angle
2.1		Crossing pipes, not connected	3.3		Valve, three-way
2.2		Crossing pipes, connected	3.4		Non-return valve (flap), straight
2.3		Tee pipe	3.5		Non-return valve (flap), angle
2.4		Flexible pipe	3.6		Non-return valve (flap), straight screw down
2.5		Expansion pipe (corrugated) general	3.7		Non-return valve (flap), angle, screw down
2.6		Joint, screwed	3.8		Safety valve
2.7		Joint, flanged	3.9		Angle safety valve
2.8		Joint, sleeve	3.10		Self-closing valve
2.9		Joint, quick-releasing	3.11		Quick-opening valve
2.10		Expansion joint with gland	3.12		Quick-closing valve
2.11		Expansion pipe	3.13		Regulating valve
2.12		Cap nut	3.14		Ball valve (cock)

I 00 25 0

## Symbols for piping

1655279-1.1  
Page 2 (10)**L28/32DF, L27/38, V28/32S, V28/32H, L28/32S, L28/32H, L23/30DF, L23/30S, L23/30H, L21/31S, L21/31, L16/24S, L16/24, L27/38S**

No	Symbol	Symbol designation	No	Symbol	Symbol designation
3.15		Butterfly valve	3.37		3/2 spring return valve contr. by solenoid
3.16		Gate valve	3.38		Reducing valve (adjustable)
3.17		Double-seated changeover valve	3.39		On/off valve controlled by solenoid and pilot directional valve and with spring return
3.18		Suction valve chest	4. CONTROL AND REGULATION PARTS		
3.19		Suction valve chest with non-return valves	4.1		Fan-operated
3.20		Double-seated changeover valve, straight	4.2		Remote control
3.21		Double-seated changeover valve, angle	4.3		Spring
3.22		Cock, straight through	4.4		Mass
3.23		Cock, angle	4.5		Float
3.24		Cock, three-way, L-port in plug	4.6		Piston
3.25		Cock, three-way, T-port in plug	4.7		Membrane
3.26		Cock, four-way, straight through in plug	4.8		Electric motor
3.27		Cock with bottom connection	4.9		Electromagnetic
3.28		Cock, straight through, with bottom conn.	4.10		Manual (at pneumatic valves)
3.29		Cock, angle, with bottom connection	4.11		Push button
3.30		Cock, three-way, with bottom connection	4.12		Spring
3.31		Thermostatic valve	4.13		Solenoid
3.32		Valve with test flange	4.14		Solenoid and pilot directional valve
3.33		3-way valve with remote control (actuator)	4.15		By plunger or tracer
3.34		Non-return valve (air)	5. APPLIANCES		
3.35		3/2 spring return valve, normally closed	5.1		Mudbox
3.36		2/2 spring return valve, normally closed	5.2		Filter or strainer

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**L28/32DF, L27/38, V28/32S, V28/32H, L28/32S, L28/32H, L23/30DF, L23/30S,  
L23/30H, L21/31S, L21/31, L16/24S, L16/24, L27/38S**

No	Symbol	Symbol designation	No	Symbol	Symbol designation
5.3		Magnetic filter	6. FITTINGS		
5.4		Separator	6.1		Funnel / waste tray
5.5		Steam trap	6.2		Drain
5.6		Centrifugal pump	6.3		Waste tray
5.7		Gear or screw pump	6.4		Waste tray with plug
5.8		Hand pump (bucket)	6.5		Turbocharger
5.9		Ejector	6.6		Fuel oil pump
5.10		Various accessories (text to be added)	6.7		Bearing
5.11		Piston pump	6.8		Water jacket
5.12		Heat exchanger	6.9		Overspeed device
5.13		Electric preheater	7. READING INSTR. WITH ORDINARY DESIGNATIONS		
5.14		Air filter	7.1		Sight flow indicator
5.15		Air filter with manual control	7.2		Observation glass
5.16		Air filter with automatic drain	7.3		Level indicator
5.17		Water trap with manual control	7.4		Distance level indicator
5.18		Air lubricator	7.5		Recorder
5.19		Silencer			
5.20		Fixed capacity pneumatic motor with direction of flow			
5.21		Single acting cylinder with spring returned			
5.22		Double acting cylinder with spring returned			
5.23		Steam trap			




















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## Symbols for piping

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Page 4 (10)























**L28/32DF, L27/38, V28/32S, V28/32H, L28/32S, L28/32H, L23/30DF, L23/30S, L23/30H, L21/31S, L21/31, L16/24S, L16/24, L27/38S**

## List of Symbols

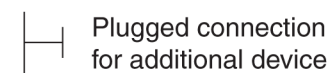
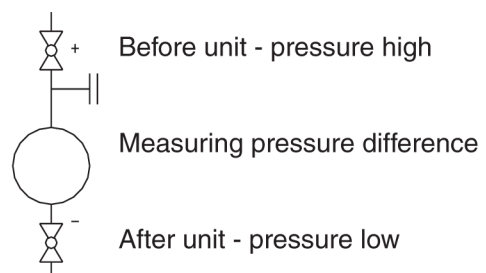
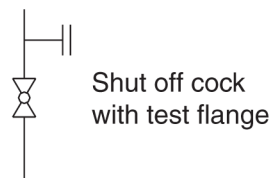
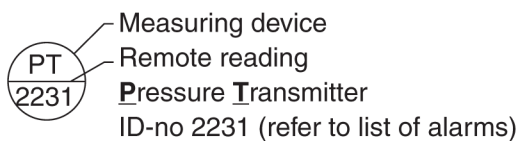
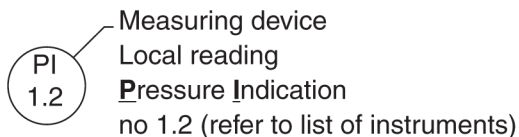
General						
Pipe dimensions and piping signature						
Pipe dimenesions						
A : Welded or seamless steel pipes.			B : Seamless precision steel pipes or Cu-pipes.			
Normal Diameter DN	Outside Diameter mm	Wall Thickness mm	Stated: Outside diameter and wall thickness i.e. 18 x 2 <b>Piping</b> —————: Built-on engine/Gearbox —————: Yard supply Items connected by thick lines are built-on engine/ gearbox.			
15 20 25 32 40 50 65 80 90 100 125 150 175 200	21.3 26.9 33.7 42.4 48.3 60.3 76.1 88.9 101.6 114.3 139.7 168.3 193.7 219.1	In accordance with classification or other rules				
General						
	Pump, general	DIN 2481			Ballcock	
	Centrifugal pump	DIN 2481			Cock, three-way, L-port	
	Centrifugal pump with electric motor	DIN 2481			Double-non-return valve	DIN 74.253
	Gear pump	DIN 2481			Spectacle flange	DIN 2481
	Screw pump	DIN 2481			Spectacle flange, open	DIN 2481
	Screw pump with electric motor	DIN 2481			Spectacle flange, closed	DIN 2481
	Compressor	ISO 1219			Orifice	
	Heat exchanger	DIN 2481			Flexible pipe	
	Electric pre-heater	DIN 2481			Centrifuge	DIN 28.004

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**L28/32DF, L27/38, V28/32S, V28/32H, L28/32S, L28/32H, L23/30DF, L23/30S,  
L23/30H, L21/31S, L21/31, L16/24S, L16/24, L27/38S**

	Heating coil	DIN 8972		Suction bell	
	Non-return valve			Air vent	
	Butterfly valve			Sight glass	DIN 28.004
	Gate valve			Mudbox	
	Relief valve			Filter	
	Quick-closing valve			Filter with water trap	ISO 1219
	Self-closing valve			Typhon	DIN 74.253
	Back pressure valve			Pressure reducing valve (air)	ISO 1219
	Shut off valve			Oil trap	DIN 28.004
	Thermostatic valve			Accumulator	
	Pneumatic operated valve			Pressure reducing valve with pressure gauge	

**General**



**Specification of letter code for measuring devices**

I 00 25 0

## Symbols for piping

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Page 6 (10)**L28/32DF, L27/38, V28/32S, V28/32H, L28/32S, L28/32H, L23/30DF, L23/30S, L23/30H, L21/31S, L21/31, L16/24S, L16/24, L27/38S**

1st letter	Following letters
D : Density	A : Alarm
E : Electric	D : Difference
F : Flow	E : Transducer
L : Level	H : High
M ; Moisture	I : Indicating
P : Pressure	L : Low
S : Speed	N : Closed
T : Temperature	O : Open
V : Viscosity	S : Switching, shut down
Z : Position	T : Transmitter
	X : Failure
	C : Controlling
	Z : Emergency/safety acting

The presence of a measuring device on a schematic diagram does not necessarily indicate that the device is included in our scope of supply.

For each plant. The total extent of our supply will be stated formally.

**General****Specification of ID-no code for measuring signals/devices****1st digit**

Refers to the main system to which the signal is related.

1xxx : Engine

2xxx : Gearbox

3xxx : Propeller equipment

4xxx : Automation equipment

5xxx : Other equipment, not related to the propulsion plant

**2nd digit**

Refers to the auxiliary system to which the signal is related.

x0xx : LT cooling water

x1xx : HT cooling water

x2xx : Oil systems (lub. oil, cooling oil, clutch oil, servo oil)

x3xx : Air systems (starting air, control air, charging air)

x4xx : Fuel systems (fuel injection, fuel oil)

x5xx :

x6xx : Exhaust gas system

x7xx : Power control systems (start, stop, clutch, speed, pitch)

x8xx : Sea water

x9xx : Miscellaneous (shaft, stern tube, sealing)

The last two digits are numeric ID for devices referring to the same main and aux. system.

Where duplicated measurements are carried out, i.e. multiple similar devices are measuring the same parameter, the ID specification is followed by a letter (A, B, ...etc.), in order to be able to separate the signals from each other.

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**L28/32DF, L27/38, V28/32S, V28/32H, L28/32S, L28/32H, L23/30DF, L23/30S,  
L23/30H, L21/31S, L21/31, L16/24S, L16/24, L27/38S**

**Basic symbols for piping**

2237	Spring operated safety valve										
2238	Mass operated Safety valve										
2228	Spring actuator										
2284	Float actuator										
2229	Mass										
2231	Membrane actuator										
2230	Piston actuator										
2232	Fluid actuator										
2223	Solenoid actuator										
2234	Electric motor actuator										
2235	Hand operated										
	Basic Symbol										
	Valves	584	585	593	588	592	590	591	604	605	579
584: Valve general 585: Valve with continuous regulation 593: Valve with safety function 588: Straight-way valve 592: Straight-way valve with continuous regulation 590: Angle valve 591: Three-way valve 604: Straight-way non return valve 605: Angle non-return valve 579: Non-return valve, ball type											
	I - bored										
	L - bored										

I 00 25 0

## Symbols for piping

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Page 8 (10)
**L28/32DF, L27/38, V28/32S, V28/32H, L28/32S, L28/32H, L23/30DF, L23/30S,  
L23/30H, L21/31S, L21/31, L16/24S, L16/24, L27/38S**

	T - bored											
2237	Spring operated safety valve											
2238	Mass operated Safety valve											
2228	Spring actuator											
2284	Float actuator											
2229	Mass											
2231	Membrane actuator											
2230	Piston actuator											
2232	Fluid actuator											
2223	Solenoid actuator											
2234	Electric motor actuator											
2235	Hand operated											
	Basic Symbol											
	Valves	594	595	586	587	599	600	601	602	607	608	606

594: Straight-way reduction valve  
 595: Angle reduction valve  
 586: Gate valve  
 587: Gate valve with continuous regulation  
 599: Straight-way cock  
 600: Angle cock  
 601: Three-way cock  
 602: Four-way cock  
 607: Butterfly valve  
 608: Butterfly valve with continuous regulation  
 606: Non-return valve, flap type

No	Symbol	Symbol designation	No	Symbol	Symbol designation
<b>Miscellaneous</b>			972		Pipe threaded connection
582		Funnel	xxx		Blind
581		Atomizer	<b>Tanks</b>		



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




















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L23/30H, L21/31S, L21/31, L16/24S, L16/24, L27/38S**

583		Air venting	631		Tank with domed ends
6.25		Air venting to the outside	771		Tank with conical ends
299		Normal opening/ closing speed	yyy		Electrical insert heater
300		Quick opening/ closing speed	<b>Heat exchanger</b>		
613		Orifice with diffuser	8.03		Electrical preheater
612		Orifice	8.08		Heat exchanger
611		Sight glass	792		Nest of pipes with bends
615		Silencer	798		Plate heat exchanger
617		Burst membrane	<b>Separators</b>		
629		Condensate relief	761		Separator
580		Reducer	764		Disc separator
589		Measuring point for thermo element	<b>Filters</b>		
1298		Air relief valve	669		Air filter
<b>Couplings/ Flanges</b>			671		Fluid filter
167		Coupling	<b>Coolers</b>		
955		Flanged connection	16.03		Cooling tower
971		Clamped connection	16.06		Radiator cooler
No	Symbol	Symbol designation	No	Symbol	Symbol designation
<b>Chimney</b>			<b>Pumps</b>		
838		Chimney	708		Centrifugal pump
<b>Expansion joints</b>			697		Piston pump
2285		Expansion bellow	704		Piston pump - radial
4.1		Expansion pipe	700		Membrane pump

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## Symbols for piping

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**L28/32DF, L27/38, V28/32S, V28/32H, L28/32S, L28/32H, L23/30DF, L23/30S,  
L23/30H, L21/31S, L21/31, L16/24S, L16/24, L27/38S**

4.1.1.1		Loop expansion joint	702		Gear pump
4.1.1.2		Lyra expansion joint	705		Screw pump
4.1.1.3		Lens expansion joint	706		Mono pump
4.1.1.4		Expansion bellow	703		Hand vane pump
4.1.1.5		Steel tube	<b>Motors</b>		
4.1.1.6		Expansion joint with gland	13.14		Electrical motor AC
<b>Compressors</b>			13.14		Electrical motor AC
716		Piston compressor	13.14		Electrical motor AC
725		Turbo axial compressor	13.15		Electrical motor DC
726		Turbo dial compressor	13.15		Electrical motor DC
720		Roots compressor	13.15		Electrical motor DC
722		Screw compressors	13.15		Electrical motor DC
<b>Ventilators</b>			13.15		Electrical motor DC
637		Fan general	13.15		Electrical motor DC
638		Fan - radial	632		Turbine
639		Fan - axial	633		Piston engine